R.A.N Aviation Radar

By Cherub Log & “Skip” Distance

The two eras of R.A.N. aircraft in operational use up to the mid 1950s were firstly the Hawker Sea Fury and the Fairey Firefly 5 & 6, both piston engine driven, and secondly the De Haviland Sea Venom Mk 53, and the Fairey Gannet. The Venom was powered by a centrifugal flow turbojet engine. The Gannet had a double Mamba 100 gas turbine engine driving contra-rotating co-axial four bladed propellors. The double Mamba was basically two side-by-side propellor turbine engines, each driving one propellor through independent gear trains. The port engine drove the front propellor. Both engines were necessary to launch this aircraft, but once airborne it could cruise comfortably on one engine only.

The Sea Fury was a single seater fighter aircraft, with no radar fitted. The Firefly was a fighter bomber and carried a crew of two, viz pilot and observer seated in separate cockpits, the observer being astern of the pilot. The observer had control of the AN/APS IV “Ash Bomb” radar. The complete transmitter, receiver and antenna assembly was housed in a nacelle which was fitted to the underside of the aircraft’s port mainplane (wing), and which looked like a long range fuel drop tank or a large bomb. Control panel and modified “A” scan display were fitted in the observer’s cockpit.

Operating frequency of the “Ash Bomb” was 10,000 Mcs using a cavity magnetron transmitter and klystron local oscillator. Intermediate frequency was 9 Mcs. Maximum range was 100 nautical miles at 10,000 feet altitude. The antenna dish reflector oscillated port to starboard 40 degrees from dead ahead at a rate of one complete sweep every 1.5 seconds. Thus the operator had a continuous 80 degree sweep ahead of the aircraft.

Firefly AS 5 and AS 6 were used to good effect operating from HMAS Sydney during her two Korean War tours. The last Firefly AS 6 was phased out of service in 1955.

The Sea Venom came into service with the R.A.N. in 1955 and was phased out of service in 1963. Unlike the Sea Fury which the Venom replaced, this fighter aircraft carried a crew of two, viz pilot and observer seated side by side. Behind a perspex dome which was the nose of the aircraft the transmitter, receiver and antenna assembly of the air intercept radar type AI 17 (ARI 5807) was fitted. AI 17 operated at 3,000 Mcs. The antenna was a sector sweep dish.

The primary role of the Gannet was anti submarine warfare. The search radar fitted was the AS Mk 19B. This radar operated in the 3 centimetre band (10,000 Mcs), generated from a power klystron. The transmitter, receiver and antenna assembly were fitted in a radome housed beneath the aircraft’s belly. When operational, the observer would cause the nacelle to lower some 120 centimetres below the aircraft’s fuselage. This would allow unobstructed transmissions and receptions for a full 360 degress of antenna continuous rotation, or selected sector sweep. For the history of the development of ASV Mk 19B, see the separate article “ASV Mk 19B” by Chris Poole.

The Gannet carried a crew of 3, viz pilot, observer and crewman seated in separate in-line cockpits. Both observer and crewman could operate the Mk 19B radar , each having his own control unit and PPI display